عنوان مقاله:
Earthquake Early Warning System Based on Smartphones

محل انتشار:
هشتمین کنفرانس بین المللی مدیریت جامع بحران (سال: 1395)

تعداد صفحات اصل مقاله: 4

نویسنده:
Farzad Azima - *Circular World Mashhad, Iran*

خلاصه مقاله:
Earthquake Early Warning (EEW) systems involve very high Capex. Therefore, EEW systems have been installed in a very limited number of regions. Applying crowdsourcing on humanitarian projects led us to use accelerometers in smartphones distributed all over the globe to detect earthquake shakes. We have implemented Earling, an innovative method of EEW system, utilizing personal smartphone sensors, to detect earthquakes by gathering shake reports. To minimize false alarms, we have devised some special algorithms, called Trust Algorithms (TA). Data sent from smartphones, is analyzed by TA in real time. In communicating with a service, the system can receive shake data from smartphones, analyze and distinguish earthquakes from everyday shakes. Then central unit applies complementary analysis on the results and send an alert to users in the vicinity of the earthquake in seconds. We have successfully tested some of the recent earthquakes using simulation data around Europe by Earling, at first to detect the earthquakes and then to issue an alert in simulated environment. Using algorithms embedded in Earling, we can detect epicenter and magnitude of earthquakes, as well as microseisms. Therefore, detecting a massive earthquake in the coastal region means a tsunami may be on its way. Earling can act as a complementary system for traditional early warning networks and following local public-safety policies, issue a tsunami early warning alert, to areas at risk.

کلمات کلیدی:
Earthquake Early Warning System; Tsunami Early Warning System; Smartphone; Public Safety; Crowdsourcing